



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

SN

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,986	07/11/2003	Masaru Kobayashi	030673-161	2784

7590

03/03/2004

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

P.O. Box 1404

Alexandria, VA 22313-1404

EXAMINER

COMPTON, ERIC B

ART UNIT

PAPER NUMBER

3726

DATE MAILED: 03/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/616,986

Applicant(s)

KOBAYASHI ET AL.

Examiner

Eric B. Compton

Art Unit

3726

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☒ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 10/117,993.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: on page 2, lines 20 and 22, "join" should read --joint--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of U.S. Pat. 1,157,666 to Bennett.

AAPA, as found on pages 1-2 of the specification, discloses a conventional wave gear device comprising a main gear; and a tooth forming ring disposed inside the main gear body and having internal teeth formed on an inner circumferential surface thereof. A joint is formed between the main gear and the tooth-forming ring by attaching bolts or the like to a flange, which resulted in increased weight of the device.

However, AAPA does not disclose knurling a surface of the tooth forming ring and press fitting the tooth forming ring and main body together to join the two members.

Bennett discloses a method for joining "an apertured member to a cylindrical member of any kind" for example a gear to a shaft. Col. 1, lines 11-19. In discussing

Art Unit: 3726

the then prior art Bennett notes, "As is well known, the common method of securing a wheel, puller, gear or the like, to a shaft so as to lock the members against independent rotative movement, is by key and key-ways. These members have also been secured together by such fastening devices as clamps, set screws, pins and the like, and also by shrinking the gear, pulley, or other member on the shaft." Col. 2, lines 74-83. Thus, Bennett seeks to distinguish from the prior art by teaching

the periphery of one of said members is provided with a series of longitudinally extending ***serrations or dentations formed circumferentially around said periphery and formed by nurling***, milling, rolling or otherwise; to provide a construction in which the ***apertured member is force onto the cylindrical member***, the cylindrical member being of greater diameter than said apertured member, ***so that said serrations or dentations become embedded in an interlock with the opposed periphery of the other member***, to provide a construction which is more particularly adapted for locking of metallic members...

Col. 1, lines 29-44 (emphasis added).

Regarding claim 15, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the wave gear device of AAPA by knurling a surface of the tooth forming ring and press fitting the tooth forming ring and main body together to join the two members, in light of the teachings of Bennett, in order to form a joint "adapted for locking metallic members ... in which this may be accomplished without essentially weakening either member." Col. 1, lines 43-50.

Regarding claim 16, AAPA discloses that in the conventional wave gear device the tooth forming ring is made of a high strength of abrasion resistance material, e.g., steel or copper material and that the main body is made of a lightweight material, e.g.,

Art Unit: 3726

aluminum alloy, particularly suited for its intended use. Specification, page 3, lines 12-19.

Regarding claim 18, the product thus formed by the process of AAPA/Bennett is inherently disclosed as well.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA/Bennett as applied to claim 15 above, and further in view of U.S. Pat. 3,501,182 to Buchsbaum.

AAPA/Bennett disclose the invention cited above. However, they do not disclose forming the internal teeth on the tooth-forming ring after the tooth-forming ring is integrated with the main gear ring.

Buchsbaum discloses a method for securing a bushing (22) into a geared hub (12) by pressfitting. "The hub 12 and the bushing 22 can be machined after they are assembled so that high degrees of precision can be met." Col. 4, lines 47-49. "After assembly of the bushing 2 into the hub 22, there is substantially a unitary structure and little possibility that relative positions of the parts will change prior to usage." Col. 4, lines 61-64. It is noted specifically with respect to an alternative embodiment that "The gear is then hobbled with respect to this uniform bore in a subsequent operation." Col. 4, lines 71-72.

Regarding claim 17, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the wave gear device of AAPA/Bennett by forming the internal teeth on the tooth-forming ring after the tooth-

Art Unit: 3726

forming ring is integrated with the main gear ring, in light of the teachings of Buchsbaum, in order ensure a high degree of precision. Col. 2, lines 42-49.

### ***Prior Art References***

The prior art references listed on the enclosed PTO-892, but not used in a rejection of the claims, are cited for their teachings of forming gears by press-fitting.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (703) 305-0240. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter B. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Eric Compton  
Patent Examiner  
A/U 3726